DOCUMENT RESUME

ED 417 910 RC 021 464

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TITLE A Collaborative Computerized Language Training Project between Gonzaga University and St. Luke's Rehabilitation Institute.
PUB DATE 1998-03-00
NOTE 9p.; In: Coming Together: Preparing for Rural Special Education in the 21st Century. Conference Proceedings of the American Council on Rural Special Education (18th, Charleston, SC, March 25-28, 1998); see RC 021 434.
PUB TYPE Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Auditory Discrimination; *Auditory Training; *Computer Assisted Instruction; *Courseware; Distance Education; Educational Cooperation; Elementary Secondary Education; *Institutional Cooperation; *Language Impairments; Special Education
IDENTIFIERS Access to Services; *Fast ForWord

ABSTRACT

This paper describes a professional and institutional partnership formed to facilitate access to Fast ForWord, a computerized approach to receptive language and auditory processing remediation. The program works best for children aged 4-14 with such classifications as communication handicapped (receptive-expressive language impairments), dyslexia, language-learning disabled, sensory integration deficit, or central auditory processing disorder. Fast ForWord provides exercises in temporal sequencing, building rate of processing, and other speech and language skills with the goal of increasing an individual's rate of auditory processing. Two professionals from Gonzaga University (Washington) and St. Luke's Rehabilitation Institute formed a partnership to address funding and technology problems impeding access to Fast ForWord. Through their collaboration, two learning-language impaired children received Fast ForWord training for 8 weeks as an alternative to traditional speech/language therapy. Pretest and posttest scores demonstrate the children's progress. In order to overcome costs and computer access obstacles in using the program, school districts could form contractual partnerships with community agencies, particularly in low-income, isolated rural areas. Contains 24 references. (SAS)

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ED 417 910

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A COLLABORATIVE COMPUTERIZED LANGUAGE TRAINING PROJECT BETWEEN GONZAGA UNIVERSITY AND ST. LUKE'S REHABILITATION INSTITUTE

BY
DR. SUZANNE HARRISON AND JULIE FISHER GIMBEL

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RC 021464

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BACKGROUND

As we enter the 21st century, rural America stands at an economic crossroads (Combs & Bailey, 1992). Rural school districts often find themselves at the center of controversy attempting to meet the needs of the local community as well as trying to respond to national requirements, especially now with the National Goals 2000 in the forefront. Several educational practitioners have recommended school-community alliances in an effort to support community/educational development (McCune, 1986; Sher, 1988). Increasingly, universities and other organizations are establishing partnerships to combat the lack of funding, fewer resources, and the desire to form collaborative ventures to meet the needs of their clients.

The purpose of this presentation is to share information about a partnership that evolved during 1997 based on the need to access the Fast ForWord computerized program developed by Scientific Learning Corporation (SLc). Fast ForWord is an innovative approach to receptive language and auditory processing remediation based on two decades of research and utilizes computer technology with internet and CD-ROM capabilities. Fast ForWord is based on the pioneering research work of Dr. Paula Tallal, a leading cognitive neuroscientist from Rutgers University, and Dr. Michael Merzenich, a leading authority on brain plasticity from the University of California at San Francisco. Fast ForWord works best for children with such classifications as Communication Handicapped (Receptive-Expressive Language Impairments), Dyslexia, Language-Learning Disabled, Sensory Integration Deficit, or Central Auditory Processing Disorder. The primary focus of the Fast ForWord Language training program is to increase an individual's rate of auditory processing.

"Over the past decade there has been an emergence of a new understanding of how changes in the brain account for perceptual learning, cognitive skill learning, and motor skill learning" (Merzenich, 1997, p. 1). The discovery of lifelong 'brain plasticity' has led to an important re-thinking about the origins of, and the treatments of, human ability and disability. SLc's Fast ForWord program evolved from this brain research. Merzenich (1997) further mentions that about 15% of all children create their early language constructs in an alternative way by integrating sound chunks that extend over the entire period of syllables and storing information about speech using an integrated syllable-based representation as contrasted with a normal, phoneme-based schema. The brains of these children have not developed the skill of separately distinguishing the syllable and word sound pieces from which syllables are constructed. These children are also significantly impaired in how their brain distinguishes different tonal parts of sound. They have massive interferences between fast, successive sounds and between

RC 021464

phonemic pieces of speech. If sound is consistently perceived as muffled during the first 6 to 10 months of life, we believe that the brain will naturally adopt this alternative, integrated syllable-based processing mode. In such circumstances, the child cannot make reliable distinctions between fast, successive phonemic events. Language-learning impaired children simply do not progress in their development of hearing fast, successive sounds as do normal children. It was discovered that through training a child could make large improvements in the ability to identify rapidly successive sounds by a particular form of practice. Fast ForWord exercises represent what SLc believes to be the most direct way to overcome the deeply embedded, perceptually and cognitively limited speech and language processing that plagues these children (Merzenich, 1997).

Fast ForWord provides exercises in such skills as temporal sequencing, building rate of processing, and other speech and language skills to include phonology, morphology, syntax, and grammar. Children who benefit most from the training are between ages four and fourteen, particularly those in the preschool and primary grades. Initial screening takes place by utilizing a comprehensive standardized language test and a measure of receptive phonology. Children are also screened on the Sequential Temporal Analysis Report (STAR) developed by SLc to quantify auditory processing. The primary focus of the Fast ForWord Language training program is to increase an individual's rate of auditory processing.

Each child must be "licensed" with SLc, a cost of $850 to the parents. The software cannot be shared with other families. The contract is for the use of the software and the internet connection between the Fast ForWord professional, SLc, and the child's computer. The internet connection makes it possible for the Fast ForWord professional to modify each child's program every week. A Fast ForWord professional (speech/language pathologist or special educator) trained by SLc provides services to the child.

The Fast ForWord software program requires either a MacIntosh or PC. Macintosh specifications require a PowerPC 601, 603, or 604 processor, MacOS 7.5.5 or higher operating system, and double-speed CD-ROM drive, while the PC computer needs a Pentium 66 MHz processor minimum (recommended Pentium 166 MHz), Windows 95 operating system, and quad-speed CD-ROM drive. The computer must also have 16 MB of memory, 16-bit sound, 28,8 kbps baud modem with Direct Internet connection, Netscape Navigator 3.01 or Microsoft Internet Explorer 3.01 or higher, and closed-type stereo headphones.

Various opportunities for access to Fast ForWord are available. The child may receive services from the professional on site or off site in the home. The professional must be connected to the system to conduct the monitoring and ensure compliance. A compliance and token economy system is incorporated into the program. The training time for each child is basically 20 minutes per game, five games per day, and five days per week. Completion of the program is achieved with 90% success on five out of seven of the games over six to eight weeks of game playing. Supervision of the child is critical to the success. Data is uploaded to SLc every one to three days in order to adapt the training program to the needs of the individual child and for the Fast ForWord professional to monitor the child's progress. Detailed data is maintained throughout the program.

GONZAGA UNIVERSITY AND ST. LUKE'S REHABILITATION INSTITUTE PARTNERSHIP

In 1996, Julie Gimbel, speech/language pathologist from St. Luke's Rehabilitation Institute, and I became interested in the research conducted by Dr. Paula Tallal and Dr. Michael Merzenich. I was trained as a special educator, and now am a professor in the department of teacher education. I was particularly interested in children with specific language disorders. Julie's work as a speech/language pathologist at St. Luke's brought her in contact with many preschool and primary-age children with speech and language deficits. She was seeking alternative avenues to help some of these children. Both Julie and I attended a Central Auditory Processing Symposium in New Jersey that fall, 1996. As we continued to talk about Tallal and Merzenich's work and the use of technology to provide a specially designed program for children (Fast ForWord), we both realized that without one another we would not be able to access the Fast ForWord program.

Lack of funding and technology became an issue for Julie and I in attempting to access Fast ForWord for identified language-learning impaired children who would benefit from the Fast ForWord training program. Therefore, we decided that forming a partnership might be our answer in providing Fast ForWord services. Developing the partnership took time, building on openness, trust, being positive, and taking the initiative (Thomas, Bennett, Bascemi, & DeLuca, 1996). Tasks that Julie and I considered included developing an interagency agreement to clarify the role of each group, setting specific goals for the partnership while defining clear and concise roles for the members, understanding risks and benefits for each party, ensuring that our plans would be carried out, expectations for the partnership, and including an evaluation of the children in the program as well as evaluating the partnership. Success of a partnership is dependent on effective leadership to include communication skills, encouragement, support, decision making, and empowerment to impact change successfully (Combs & Bailey, 1992). Taking into account these guidelines for a successful partnership, Julie and I determined that we must go forward with our collaborative work -- we were determined to access Fast ForWord for two identified learning-language impaired children we believed would benefit from the training as an alternative to traditional speech/language therapy and other remedial language treatment.

Julie became the professional trained by SLc (I have since been trained). St. Luke's did not have the required computers for the project since, at the time, Fast ForWord could be run only on MacIntoshes and St. Luke's owned PC's . Conversely, I was in a university site with access to MacIntosh computers on a regular basis. Through St. Luke's it became possible to obtain insurance benefits while I was not. Thus our partnership blossomed. We began our plan of action to establish a partnership, to screen children for training on Fast ForWord, and to get the program off the ground. By May 1997 we had established our partnership with both institutions in agreement. We wrote an agreement between the institutions and with the families with children needing the Fast ForWord program.

Due to scheduling factors, computer availability, and daily adult monitoring constraints, we chose to select two children to initially participate in the project -- one from the Spokane, Washington community and the other

from a small community near Boise, Idaho. The parents from Idaho chose to have their daughter live with her grandparents for the summer in a rural community two hours from Spokane and then commute to Gonzaga University where the computer training program was located. For approximately eight weeks the two children progressed through the Fast ForWord program with both Julie and I taking turns monitoring the children each day. As the FastForWord professional, Julie assessed the data and made the necessary adjustments to each child's program. Pre- and post-testing took place for both children with demonstrated growth as determined on the LAC Test - Form B and the TOLD Test.

Child A (ten-year old)

LAC Test - Form B

	Pre Test Converted Score	Post Test Converted Score
Category 1A	9	9
Category 1B	18	18
Category II	36	42
Total	63	69

TOLD I:2 Intermediate

Sub Tests	Pre Test	Post Test
	Standard Scores	
sentence combination	4	5
vocabulary	7	8
word ordering	2	5
generals	6	8
grammar comprehension	8	8
malapropisms	7	8
Composites	Quotients	
spoken language	70	79
listening	83	87
speaking	61	74
semantics	79	87
syntax	66	75

Child B (five-year old)

LAC Test - Form B

	Pre Test Converted Score	Post Test Converted Score
Category 1A	8	9
Category 1B	6	15
Category II	12	30
Total	26	54

TOLD P:2 Primary

Sub Tests	Pre Test	Post Test
	Standard Scores	
picture vocabulary	13	14
oral vocabulary	11	11
gram. understanding	7	12
sentence imitation	5	8
gram. completion	7	9
word discrimination	7	12
word articulation	3	3
Composites	Quotients	
spoken language	83	99
listening	94	117
speaking	77	85
semantics	112	115
syntax	76	98
phonology	70	85

As determined by the LAC and TOLD tests, the child from Idaho (five-year old) showed the most growth while the child from Washington (ten-year old) demonstrated some growth. At the end of the eight weeks the child returned home to Boise, continuing with Fast ForWord on a home computer connected through internet to Julie in Spokane to monitor the child's daily progress. The ten-year old has not continued with the program due to family, schedule, and computer constraints. If the computer were set up in the home, the ten-year old would probably have continued the training program.

Julie and I found the partnership a rewarding one. It is a replicable model for rural, suburban, and urban communities. We were able to work well together and would like to continue servicing other children. What we have learned from the project, however, is that in the end, the time commitment for both of us was not realistic over the long haul. Much of the monitoring of the project was on our own time. Both Julie and I have been contacted by families wishing to access Fast ForWord. Some of these families live in smaller communities in Idaho, Montana, and Alaska. We would need to meet first with the families to determine eligibility. The program itself could be set up in their homes provided the family possesses computer capability with internet services to communicate with the Fast ForWord professional and SLc.

Greater accessibility to Fast ForWord is possible through school districts. Fast ForWord is beneficial to the large percentage of children currently receiving speech/language services. School districts in rural communities that have limited speech/language or special education resource room services due to time or financial constraints, or the lack of qualified certificated specialists could benefit from a partnership such as ours. The schools will need funding for the computer capability, service agreements for each child with SLc, and then contracting with a trained Fast ForWord professional to provide the training and monitoring of the program. Families living in rural communities may also be able to access Fast ForWord on their own, independent of the school district.

In summary, Fast ForWord uses cutting edge computer exercises that acoustically alter speech sounds so they are more readily distinguishable to

language-learning impaired children. The training program is suitable for schools, clinics, and learning centers that work with language-learning impaired children. Accessibility should not be limited to urban or suburban communities. Julie and I envision Fast ForWord as a viable technological program reaching a greater number of children in rural communities who are not currently receiving help with traditional approaches to speech/language services.

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